IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE

1998 ANNUAL REPORT

HAL N. ANDERSON, CHAIRMAN
IDAHO DEPARTMENT OF WATER RESOURCES

ACKNOWLEDGEMENTS

About this Report: This report was produced to satisfy a requirement of Executive Order 96-24 that the Idaho Geographic Information Advisory Committee report its activities. This mandate is not funded, so it is not an easy task to complete. Because of this problem, discussions were held at the IGIAC general meeting in November, 1998. The participants of that meeting decided that the best course of action was to make the transition from a paper report to a virtual report available on the world wide web. This is the first Web edition of the IGIAC Annual Report. It is put on the Web with the understanding that the individuals and organizations that made reports at the Annual Meeting will post the information they want included in this report.

This report is intended to be a resource and informational document for all who are interested in, or use, mapping technologies. The report was compiled and formatted by IDWR personnel. Sincere thanks goes out to all members of Idaho's mapping community who contributed to this report, and apologies are offered in advance for any errors or omissions.

To post information for this report: Individuals having information to include in this report should e-mail the information to one of the following: Hal Anderson (handerso@idwr.state.id.us) , Tony Morse (tmorse@idwr.state.id.us), or Mike Verdun (mverdun@idwr.state.id.us).

Costs associated with this publication are available from the Geographic Information Section of the Idaho Department of Transportation, 3311 W. State Street, Boise, Idaho 83703, in accordance with Section 60-202, Idaho Code.

TABLE OF CONTENTS

LIST OF TABLES

EXECUTIVE SUMMARY

The Idaho Technology Resource Management Council lists GIS Coordination number nine on its list of Top 10 priorities. The Council provided necessary leadership for successful reissuing an Executive Order in December 1996 that continues IGIAC and the Idaho Geographic Information Center (IGIC) (see Appendix A).

The ITRMC Homepage (http://www.state.id.us) is listed under State Agencies, Commissions and Councils and provides minutes, agendas and upcoming meeting notices.

The Digital Data Subcommittee reports that an anonymous ftp site has been established for data distribution at ftp://ftp.state.id.us

The Metadata Subcommittee established the Idaho GIS Metadata Server where metadata text files can be queried and accessed. The client HTML page is established temporarily on the INEEL server from the following URLs (to name a few): http://www.idwr.state.id.us/idwr/planpol/techserv/resinfo/gis.htm, http://www.inel.gov/gis/eris/idaho_wais.html, and http://www.inel.gov/index.html.

The Global Positioning Systems Subcommittee reports that a Homepage showing the locations of the GPS base stations serving Idaho is located at http://www.idwr.state.id.us/idwr/support/dpsec/gps/gpssites.htm The US Forest Service also lists GPS base stations at www.fs.fed.us/database/gps/welcome.htm

The Watershed Subcommittee reported that the draft fifth field coverage was complete. Information about the watershed coverage, criteria used to create the coverage, ftp information and error/enhancement reporting forms may be found at http://www.idwr.state.id.us/idwr/infotech/main.htm

The Northern Idaho Geographic Information Advisory Committee reports that Kootenai County is working with GPS technology in order to capture all roads, driveways and all structures throughout the entire county. This GPS data along with their current base layer data will be integrated into a new 911 system. An Internet site which includes numerous data sets has been set up at www.co.kootenai.id.us Information about northern Idaho can also be found at the Idaho Panhandle National Forest web page: www.fs.fed.us/outernet/ipnf/questbook.html The U.S. Geological Survey provides an entire list of Internet addresses about product information and software tools, see Appendix F.

The establishment of Internet addresses and the availability of data and information is an important step on the exciting journey of geographic information.

ABOUT IGIAC

As early as the 1970's, the Idaho Mapping Advisory Council (IMAC) provided a yearly information exchange for state and federal agencies involved in mapping. IMAC also advised the USGS regarding topographic maps that were in greatest need of completion or revision and helped members efficiently plan aerial photography. In 1980, the Idaho Image Analysis Facility was established under Executive Order 80-4; the Department of Water Resources was designated the responsible agency for its operation. The facility provided technical support for agencies interested in remote sensing and GIS programs.

With the rise of computerized geographic information systems and remote sensing, the nature and scope of mapping activities changed. To accurately reflect changes, the executive branch adjusted terminology associated with these activities. Executive Order No. 88-16 changed IMAC to the Idaho Geographic Information Advisory Committee (IGIAC). The order also created the Idaho Geographic Information Center (IGIC) within the Idaho Department of Water Resources (IDWR), to be managed in accordance with IGIAC policies. In 1996, the Executive Order was again modified under leadership from the Information Technology Resource Management Council (ITRMC). The changes provided for the inclusion of IGIAC and IGIC activities within the Council. Voting members for IGIAC are the State of Idaho Departments of Transportation, Water Resources, Fish and Game, Parks and Recreation, and Lands; the Divisions of Environmental Quality and Financial Management and the Tax Commission. Non-voting participation is open to other state and federal agencies, industrial and professional organizations, and academic institutions. The Order allows IGIAC to appoint subcommittees as needed, and requires that IGIAC submit an annual report to the Governor.

IGIAC's responsibilities are to:

1. advise the Governor and the ITRMC on geographic information issues;
2. promote establishment and development of a centralized and coordinated clearinghouse;
3. review new geographic information, mapping, global positioning systems and remote sensing technology applications that might benefit the state's interests;
4. make recommendations to state and federal agencies regarding geographic information systems, mapping programs, global positioning systems and remote sensing;
5. assist in preparation of requests to appropriate federal agencies as a part of the diversified national mapping program; and
6. meet on at least an annual basis to review geographic information programs, and make recommendations for cooperation and resource sharing.

IGIC is directed to:

1. provide necessary coordination and technical support;
2. promote operational applications of digital image analysis and geographic information systems;
3. provide systems management support to ensure proper operation and availability of digital geographically-referenced data for applications by various users;
4. provide technical assistance, in the form of consultation and training, to allow and encourage application of digital mapping techniques and equipment by employees of other agencies and organizations;
5. cooperate with, receive and expend funds from other sources for continued development and utilization of image analysis geographic information techniques;
6. maintain an assessment of geographic information system and image processing capabilities needed within Idaho by existing and potential users; to cooperate with Idaho universities and other research institutions for development and implementation of improved capabilities resulting from research

activities;

7. coordinate and cooperate with the state Information Technology Resource Management Council; and
8. as resources permit, provide support to IGIAC and ITRMC, including the establishment and development of a centrally coordinated, spatial data clearinghouse.

IDAHO TECHNOLOGY RESOURCE MANAGEMENT COUNCIL

By Idaho Department of Administration

The Information Technology Resource Management Council (ITRMC) held its first meeting May 29, 1996, and the paramount order of business was to identify the top "IT" issues facing Idaho state government.

Making the Council's **"Top Ten List"** at number 9 was GIS coordination and the operations of the Geographic Information Center. Other major issues included in order of priority: **1.** Budget and Procurement; **2.** Year 2000; **3.** Electronic Mail; **4.** Internet Access and Security; **5.** Network Consolidation; **6.** Public Safety Communications; **7.** EDI/EBT/EFT (Electronic Data Interchange/Electronic Benefit Transfer/Electronic Fund Transfer); **8.** Data Center Consolidation; **9.** GIS; and **10.** Virtual Database.

The Council is making significant progress in the above major areas in its efforts to maximize the state's IT resources and services, an investment valued at more than $125 million. And, the Council provided the necessary leadership for the successful reissuance of an Executive Order this past December regarding continuance of IGIAC and the Idaho Geographic Information Center, IGIC.

A task force was organized in the summer of 1996 and was chaired by Hal Anderson, Department of Water Resources; and Miles Browne, manager of the ITRMC Project Team. The task force worked to amend the Order, formally presenting its recommendations to the Council. The Council approved the group's short- and long-term recommendations and Governor Phil Batt re-issued a new Executive Order, strengthening GIS coordination and process for the state of Idaho (see Appendix A).

The Council is comprised of the following: **Executive Agency Officers**: Dwight Bower, Department of Transportation, and Linda Caballero, Department of Health and Welfare; **Public Safety Official**: Robert Sobba, Department of Law Enforcement; **Agency Information Systems Manager**: Rob Spofford, Department of Water Resources; **Judiciary**: John Peay; **Elected Officer**: J.D. Williams, State Controller; **State Board of Education**: Darrell Manning; **Superintendent of Public Instruction**: Dr. Anne C. Fox; **Representative of Rural Interests**: Cindy Siddoway, Terreton, Idaho; **Local Government/City and County**: Dan Chadwick, Idaho Association of Counties; **Industry IT Executive**: Raymond Sasso, Jr., Simplot; **Legislative Appointments**, Senator Hal Bunderson, Senator Clint Stennett, Representative John Alexander and Representative Paul Kjellander.

The Council follows the philosophy of a local control, central coordination of information technology and has statutory authority according to HB 661, which passed in the 53rd Idaho Legislature. The Department of Administration implements ITRMC policy pertaining to statewide IT issues.

The ITRMC Project Team, also created as result of HB 661, is charged with assisting state agencies in planning for ways to satisfy their individual information technology needs. The Team, managed by Miles Browne, in collaboration with agency directors and IT personnel, ensures respective agency IT plans fall within the guidelines and policies as recommended in the "Info Tech '96 Task Force Report" and by the Council.

The process of establishing statewide policies and standards governing the use of information technology tools is a very formidable task, according to Council Chair, Pam Ahrens, Director of the Department of Administration.

"IT management is definitely not for the faint of heart," Ahrens says. "Idaho taxpayers are expecting us to develop

cost-effective solutions for efficient delivery of government services. It is one task the state of Idaho must accomplish to effectively use emerging technologies to better leverage our resources and better serve our citizens."

For more information about the ITRMC; official meeting minutes; listing of upcoming meetings and agendas, see the State of Idaho Homepage on the Internet, http://www2.state.id.us/itrmc/index.htm. The Council also issues a newsletter, Info Tech News, published several times a year. Contact Pat Wynn, ITRMC Project Team, 208-334-5330 or e-mail: pwynn@adm.state.id.us

1998 IGIAC VOTING MEMBER MEETINGS

IGIAC voting members meet as needed to discuss and decide issues. In 1998, IGIAC members met times, in addition to the annual meeting. Dates and subject of each meeting follow:

1998 IGIAC ANNUAL MEETING AGENDA

The annual meeting was held November 12 and 13, 1998, at the National Interagency Fire Center Training Auditorium in Boise. Approximately 90 people attended the two-day annual meeting (see Appendix C). Here is the agenda:

November 12, 1997

8:30 a.m.	Welcome and Introductions
8:45a.m.	Annual Report and Data Clearinghouse
9:30 a.m.	ESRI Master Purchase Agreement, Statewide, Universities
10:00 a.m.	Break
10:30 a.m.	Land Cover Mapping, USGS, Space Imaging
12:00 n.	Lunch
1:30 p.m.	Agency Reports: Federal; State; Tribal; County; City; Industry
5:00 p.m.	Adjourn

November 13. 1998

8:30 a.m.	Committee Reports: North Idaho; GPS; East Idaho;1:24K; Metadata; URISA Chapter; Watershed
10:00 a.m.	Break
10:30 a.m.	Idaho Digital Data Survey Report
12:00 n.	Lunch
1:30 p.m.	GIS Coordination Efforts, ITRMC and USGS
2:30 p.m.	NACO County GIS Offer
3:00 p.m.	Break
3:30 p.m.	Open
5:00 p.m.	Adjourn

1996 IGIAC SUBCOMMITTEES

IGIAC has five subcommittees that focus on specific topics and areas of interest. They are:

1. Metadata Subcommittee, concerned with developing metadata--data about data--standards for Idaho, and with documenting differences between the Idaho standards and the emerging federal standards, chaired during 1996 by Bob Harmon and Luke White;
2. GPS Subcommittee, focused on applications and technology of global positioning systems, and on developing standards for acquiring and exchanging this data, chaired during 1996 by John Courtright;
3. Watershed Subcommittee, formed to create a common watershed boundary delineation for use by state, federal and local governments, and by private industry, in managing natural resources, chaired by Hal Anderson;
4. Eastern Idaho Subcommittee, providing a meeting point for mappers in the Pocatello-Idaho Falls-Eastern Idaho region, who cannot attend IGIAC meeting in Boise, chaired during 1996 by Dennis Hill; and
5. Northern Idaho Subcommittee, providing the same function for mappers in the Coeur d'Alene-North Idaho region, chaired during 1996 by Randall Sounhein.

METADATA SUBCOMMITTEE

GLOBAL POSITIONING SYSTEMS SUBCOMMITTEE ANNUAL REPORT

WATERSHED SUBCOMMITTEE

Hal Anderson (handerso@idwr.state.id.us) and Linda Davis (ldavis@idwr.state.id.us)

http://www.idwr.state.id.us/idwr/planpol/watplan/planning/gis.html

NORTHERN IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE

SOUTHEAST IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE

URBAN AND REGIONAL INFORMATION SYSTEMS ASSOCIATION
NORTHERN ROCKIES CHAPTER

The Rocky Mountain Chapter focused on sponsoring university students (ten), presenting papers, conference volunteering, and generally participating in all conference and extra curricular activities. To the many who helped, a big thank you! We can always use help on these conferences.

IDAHO GEOGRAPHIC INFORMATION CENTER

http://www.idwr.state.id.us/gisdata

IDAHO STATE TAX COMMISSION

GEOGRAPHIC COORDINATE DATABASE (GCDB)

IDAHO DEPARTMENT OF LANDS 1:24,000 MAPPING

AERIAL PHOTO AND ORTHOPHOTOQUAD NEWS

Orthophoto Quadrangle Production

Orthophoto quadrangles (OQs) are mostly 1:24,000-scale photo image maps formatted to cover the same area as the standard 7.5-minute quadrangle maps. Some OQs are made to other scales and some agencies use a township format.

Originally conceived as a temporary stand-in for standard maps, orthophotoquads, as they are called, have found a niche as a replacement for high-altitude photo maps. They have been adopted and maintained as a base by the U.S. Bureau of Land Management, the U.S. Forest Service, the U.S. Natural Resources Conservation Service, U.S. Bureau of Indian Affairs, the Idaho Department of Lands, the Idaho Department of Water Resources, Boise Cascade Corporation, and Potlatch Corporation. Nearly all agencies using OQs acquire reproducible masters. Nearly all production of orthophotography is made by digital methods.

U.S. GEOLOGICAL SURVEY - IDAHO PROJECT STATUS REPORT

Department of Interior High Priority Initiative Projects

Digital Orthophotos
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_doq.html

Digital Raster Graphics

USGS Summary of Idaho Mapping Program

USGS Digital Raster Graphics Cost Share Program

USGS Digital Raster Graphics

USGS 7.5 MINUTE DLGs (PLSS)
http://mcmcweb.er.usgs.gov/status/drg_stat.html

USGS 7.5 MINUTE DLGs (BOUNDARIES)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_bd7.html

USGS 7.5 MINUTE DLGs (HYPSOGRAPHY)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_hp7.html

USGS 7.5 MINUTE DLGs (HYDROGRAPHY)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_hy7.html

USGS 7.5 MINUTE DLGs (CULTURE)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_ms7.html

USGS 7.5 MINUTE DLGs (NON-VEGETATION)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_nv7.html

USGS 7.5 MINUTE DLGs (PLSS)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_pl7.html

USGS 7.5 MINUTE DLGs (VEGETATION)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_sc7.html

USGS 7.5 MINUTE DLGs (SURVEY CONTROL)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_sm7.html

USGS 7.5 MINUTE DLGs (TRANSPORTATION))
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_tr7.html

USGS 7.5 MINUTE DEMs (30 METER - CTOG, DCAS,GPM, MP)
http://mcmcweb.er.usgs.gov/status/rmmc/id/id_dem30.html

USGS 100K BOUNDARY DLG OVERLAYS STATUS
http://mcmcweb.er.usgs.gov/status/100k/us_bd.html

USGS 100K PLSS DLG OVERLAYS STATUS
http://mcmcweb.er.usgs.gov/status/100k/us_pl.html

USGS 100K HYPSOGRAPHY DLG OVERLAYS STATUS
http://mcmcweb.er.usgs.gov/status/100k/us_hp.html

USGS 100K HYDROGRAPHY DLG OVERLAYS STATUS
http://mcmcweb.er.usgs.gov/status/100k/us_hy.html

USGS 100K TRANSPORTATION DLG OVERLAYS STATUS
http://mcmcweb.er.usgs.gov/status/100k/us_tr.html

USGS 100K DEM STATUS
http://mcmcweb.er.usgs.gov/status/100k/us_dem.html

OTHER AGENCY PRODUCTS STATUS MAPS

IDAHO GEOLOGICAL SURVEY STATUS OF DIGITAL GEOLOGIC MAPPING

http://www.uidaho.edu/igs/igs.html

GEOGRAPHIC INFORMATION SYSTEMS IDAHO USERS

LICENSE SYSTEM	COMPANY/AGENCY	TYPE*	CONTACT	PHONE NUMBER
INTERGRAPH	Bonneville County	2,2,2,2,1(8)	Janet Cheney	529-1350 x1568
	Idaho Transportation Dept.	2,2,2,3,5(3)	Ron Cole	334-8222
	Lockheed Martin Idaho Tech.Co. Inc.	2,4	Nielsen Burch	526-5676
	POWER Engineers/GGI	2	Robb Dye	378-6316
ARC/INFO ARC/VIEW	Ada County GIS	2,2,2,2,2,2 2,2,2	Sheldon Bluestein	364-2378
	Ada County Highway District	3,1,1,1,1	Diane Holloran	345-7635
	Ada Planning Association	2 (3)	Roni Gehring-Pratt	345-5274
	Boise Cascade	5(3), 2(3)	Nick Blacklock	384-7999
	Boise City Public Works	3	Jim Hetherington	384-3900
	Canyon County Assessor	1(3)	Ted Martin	454-7279
	Coeur d'Alene Tribe	4	Berne Jackson	686-1800 x218
	Coeur d'Alene Tribal Forestry	3	Mike Finity	686-1315
	Holladay Engineering	1,1	Renee Bettis	642-3304
	Idaho Power Company	5(6)	Frank Mynar	388-2977
	Idaho (State Agencies)			
	Archeological Survey of Idaho	1	Leo Flynn	885-6123
	Dept. of Fish & Game	2,2	Bart Butterfield	334-2772
	Dept. of Lands	3,3,3,2,1,1	Dave Gruenhagen	334-0277
	Dept. of Water Resources	2,2,2,2,2,2, 2,2,2,2,2,2	Tony Morse	327-7997
	Division of Environmental Quality	2,1,1	John Courtright	373-0271
	Military Division	2,2	Nick Nydegger	422-4182
	State Tax Commission	5,5,5	Joe Bucher	334-7750
	Kootenai County Planning & Zoning	1,1	Kathryn Printz	666-8268
	Lockheed Martin Idaho Tech. Co. Inc.			
	INEEL Computer Services	2(3)	Pam Johnson	526-9379
	INEEL Spatial Analysis Laboratory	4,3(13)	Luke White	526-1036
	Morrison Knudsen	2(3),1	Chris Clay	386-5720
	Nez Perce Tribe	3,3	Jack Bell	843-7392
	Peregrine Fund	1,1	Richard Watson	362-3716
	Pocatello City	3	Dennis Hill	234-6230
	Potlatch	3,2(3),2(3), 2(3),2,2,2,2 2,2	Dennis Murphy	799-1156
	POWER Engineers/GGI	2,1,3	Robb Dye	378-6316
	Spatial Dynamics	3,3,3,3,3,3	Kim Johnson	345-6788
	Teton GIS		Julie Brizzee	525-8369
	United Water Idaho	2	Doug Stone	362-7359

*1 - PC License
2 - Workstation License or Node Lock
3 - Multiuse License
4 - Terminal Access to Multiuser System
5 - Windows NT

LICENSE SYSTEM	COMPANY/AGENCY	TYPE*	CONTACT	PHONE NUMBER
ARC/INFO	United States (Federal Agencies)			
	Bureau of Land Management			
	(State Office and all District offices)	3,4	Bill Yeager	373-3965
	Bureau of Reclamation	3,3	Mike Beaty	378-5172
	Forest Service			
	Forest Science Lab	3,2,1	Mike Radko	373-4342
	Forest Health Protection	2,1	Dick Halsey	373-4267
	Intermountain Research Station	1	Terri Jain	883-2331
	Boise National Forest		Joe Frost, Bill Rush	373-4203
	Caribou National Forest	3,3	Paul Oaks	236-7577
	Payette National Forest	2,1	Mickey Pillers	634-0781
	Targhee National Forest	3,3	David Betz	624-3151
	Natural Resources			
	Conservation Service	3,1	David Hoover	378-5785
	U.S. Geological Service			
	Biological Resources Division	3	Tom Zarriello	385-4800
	U.S. Geological Survey-WRD	2,2,2,2,2	Steve Garcia	387-1331
		2,2,2	Molly Maupin	387-1307
	University of Idaho (Site Licensed)			
	Agriculture	1	Larry Lass	885-7802
	Agriculture Research Ctr-Kimberly	4	Clarence Robison	423-6610
	Anthropology	1	Leo Flynn	885-6123
	Capital Planning	3	Sylvia Ferrin	885-7100
	Environmental Science		Margrit Von Braun	885-6113
	Forestry	2(6), 4(3),1(3)	Liza Fox	885-5779
	Geography	5(2), 4 (20)	Karl Chang	885-6240
	Landscape Architecture	2	Toru Otawa	885-7729
	Library	1,1,1	Dennis Baird	885-7552
ARC/CAD	Boise City Airport		Sandi Samson	383-3110
	United Water Idaho		Doug Stone	362-7359
MOSS	Bureau of Land Management	4,3	Bill Yeager	373-3965
GRASS	Bureau of Land Management	2	Mike Candelaria	373-3966
	Natural Resources Conservation Svc.	2,2	David Hoover	378-5785
	Idaho Military Division	2	Nick Nydegger	422-4182
	U.S. Geological Survey Biological Resources Division	2	Tom Zariello	331-5204

* 1 - PC License 2 - Workstation License or Node Lock 3 - Multiuse License 4 - Terminal Access to Multiuser System 5 - Windows NT

[Editor's Note] This is not a list of <u>all</u> GIS users in Idaho. The expansion of GIS technology and its availability is fostering the growth of the number of GIS users. There are also frequent changes in personnel and telephone numbers. If your agency was omitted from this list, the omission was unintentional. To notify IGIAC that your agency should be included in the future, contact Hal Anderson at the Idaho Department of Water Resources, 1301 N. Orchard, Boise, Idaho 83706.

APPENDIX A: EXECUTIVE ORDER 96-24

THE OFFICE OF THE GOVERNOR
EXECUTIVE DEPARTMENT
STATE OF IDAHO
BOISE

EXECUTIVE ORDER NO. 96-24

IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITEE
AND GEOGRAPHIC INFORMATION CENTER

REPEALING AND REPLACING EXECUTIVE ORDER NO. 92-24

WHEREAS, it is in the interest of the state of Idaho, federal resource management agencies, local government, and private organizations to address resource management issues; and

WHEREAS, various geographic information activities--such as remote sensing, digital cartography, global positioning systems, and geographic information systems--are basic to sound resource management; and

WHEREAS, it is important to minimize duplication and maximize utilization of state and federal funds expended on these activities; and

WHEREAS, it is important to officially, efficiently, and accurately communicate to the federal government Idaho's geographic information priorities; and

WHEREAS, the state's geographic information community has an increasing need to keep abreast of the rapidly changing technology in mapping and related disciplines; and

WHEREAS, it is important to provide channels of communication and cooperation among agencies of the state of Idaho, federal resource management agencies, local government, and private organizations; and

WHEREAS, is essential the state of Idaho establish and maintain standards relating to the creation, maintenance, and analysis of geographic information; and

WHEREAS, it is necessary on occasion for the state to provide operational support to users of geographic information; and

WHEREAS, the Department of Water Resources has developed the capability within the Geographic Information Center to provide such support; and

WHEREAS, it is in the interest of the state of Idaho that this capability be shared and further developed in cooperation with federal resource management agencies, local government, and private organizations for conducting needed resource inventory and mapping;

NOW, THEREFORE, I, PHILIP E. BATT, Governor of the state of Idaho, by the authority vested in me by the Constitution and laws of the state of Idaho, do hereby order:

1. The continuation of the Idaho Geographic Information Advisory Committee. The membership of the Idaho Geographic Information Advisory Committee shall consist of the heads, or their designees, of state departments and agencies with responsibilities in the natural and resource and planning fields that have an interest in geographic information. Agencies represented shall include the departments of Fish and Game, Health and Welfare (Division of Environmental Quality, Lands, Parks and Recreation, Transportation, and Water Resources, as well as the Tax Commission and the Division of Financial Management. All state members of the Committee shall have the right to vote. The voting members of the Committee shall elect one of their number to serve as Chair of the Committee. The Committee may approve voting membership in the Committee by other state agencies that might have natural resource, planning, or geographical information responsibilities or expertise. The Idaho Geographic Information Advisory Committee shall also include non-voting members from organizations the state membership feels could benefit the functioning of the Committee, such as federal

agencies operating in Idaho, local governments, Idaho industry associations, and/or state academic institutions that have responsibilities or expertise in the fields of natural resources, planning, or geographic information.

2. The responsibilities of the Idaho Geographic Information Advisory Committee shall be to:

(a) report to the Information Technology Resource Management Council and advise the Governor on geographical information issues, including the need for standards or enunciation of operational and planning policy for the State;

(b) promote establishment and development of a centralized and coordinated clearing-house for the Collection, cataloging, and dissemination of remote sensing data and digital geographical information;

(c) review new geographic information, mapping, global positioning systems, and remote sensing technology applications that might be utilized to benefit the state's interests, and assess the geographic information system and image-processing capabilities needed within Idaho by existing and potential users;

(d) make recommendations to state and federal agencies regarding state policies and standards on geographic information systems, mapping programs, global positioning systems, and remote sensing specifications;

(e) assist in the preparation of requests to appropriate federal agencies as a part of the diversified national mapping program; and

(f) meet at least annually to review geographic information programs carried on by federal, state and local government agencies, and private industry, develop a list of priorities with regard thereof, and make recommendations for Cooperation and resource sharing.

3. The Idaho Geographic Information Advisory Committee shall appoint such standing committees as might be necessary to address current geographic information issues.

4. The Idaho Geographic Information Advisory Committee shall submit an annual report to the Information Technology Resource Management Council about Committee activities subsequent to the annual meeting.

5. The Director of the Department of Water Resources, managing the Idaho Geographic Information Center in accordance with the geographic information policy of the Idaho Geographic Information Advisory Committee, shall have the Idaho Geographical Information Center:

(a) provide necessary coordination and technical support to state agencies and other organizations including existing geospatial programs within the departments of Lands, Transportation, Tax, Fish and Game and the Division of Environmental Quality;

(b) promote the operational applications of digital image analysis and geographic information systems;

(c) provide systems management support to ensure the proper operation and availability of digital geographically-referenced data for applications by various users;

(d) provide technical assistance, in the form of consultation and training to allow and encourage application of digital mapping techniques and equipment by employees of other agencies and organizations;

(e) cooperate with, receive, and expend funds from other sources for the continued development and utilization of image and geographic information techniques;

(f) maintain an assessment of the geographic information systems and image processing capabilities needed within Idaho by existing and potential users, to cooperate with Idaho universities and other research institutions for the development and implementation of improved capabilities resulting from research activities;

(g) coordinate and cooperate with the State Information Resource Managment Council (ITRMC);

(h) as resources permit, provide support to Idaho Geographic Information Advisory Committee and Information Technology

Resource Management Committee, including the establishment and development of a centrally coordinated, spatial data clearing-house.

This Executive Order repeals and replaces Executive Order No. 92-24. This Executive Order shall cease to be effective four years after its entry into force.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Idaho at the Capitol in Boise on this twenty-second day of November in the year of our Lord nineteen hundred ninety-six and of the Independence of the United States of America the two hundred twenty-first and of the Statehood of Idaho the one hundred seventh.

PHILIP E. BATT
GOVERNOR

PETE T. CENARRUSA
SECRETARY OF STATE

APPENDIX B: LIST OF 1996 IGIAC ANNUAL CONFERENCE ATTENDEES

Pam Ahrens
ID Dept of Administration
P.O. Box 83720
Boise, ID 83720-0089
(208) 334-3382

Julie Allmundigner
Canyon County Assessor
1115 Albany Street
Caldwell, ID 83605
(208) 454-6615

Hal Anderson
ID Dept. of Water Resources
1301 N. Orchard Street
P.O. Box 83720
Boise, ID 83720-0098
(208) 327-7888
FAX: (208) 327-7866
handerso@idwr.state.id.us

Ron D. Andrew
4420 W. Franklin Rd.
Meridian, ID 83642
(208) 888-9105

Tom Betzold
U.S. Forest Service
P.O. Box 1026
McCall, ID 83638
(208) 634-0650
FAX: (208) 634-0967

Rose Blazicevich
ID State Tax Commission
Technical Support
800 Park Ave.
P.O. Box 36
Boise, ID 83722-0320
(208) 334-7750
FAX: (208) 334-7741

Roger Brink
Equinox, Inc.
P.O. Box 4535
Ketchum, ID 83340
(208) 726-8200
FAX: (208) 726-2457
equinox@micron.net

Julie Brizzee
INEEL-Lockheed
P.O. Box 1625, MS 3910
Idaho Falls, ID 83415-1635
(208) 526-8440
FAX: (208) 526-6902
bzj@inel.gov

Mindy Brown
Space Imaging
9351 Grant
Thornton, CO 80229
(303) 254-2063
FAX: (303) 254-2215

Joe Butcher
Idaho State Tax Commission
800 W. Park Blvd, Plaza IV
Boise, ID 83722
(208) 334-7750
FAX: (208) 334-7741

Bart Butterfield
ID Dept. of Fish & Game
P.O. Box 25
Boise, ID 83707
(208) 334-2772
FAX: (208) 334-2114
bbutterf@idfg.state.id.us

Joe Calderwood
U.S. Forest Service
325 25th Street
Ogden, UT 84414
(801) 625-5213
FAX: (801) 625-5229

Mike Candelaria
BLM-ISO
1387 S. Vinnell Way
Boise, ID 83709
(208) 373-3966
FAX: (208) 373-3949
mcandela@micron.net/mcandela@idso.id.blm.gov

Greg Carson
Eagle Mapping
511 W. Rush Ct.
Eagle, ID 83616
(208) 939-0002
FAX: (208) 939-8987
gcarson@micron.net

Paul Castelin
ID Dept. of Water Resources
1301 N. Orchard
Boise, ID 83706-2237
(208) 327-7900
FAX: (208) 327-7866
pcasteli@idwr.state.id.us

Janet Cheney
Bonneville Co.
605 N. Capitol
Idaho Falls, ID 83402
(208) 529-1350 ext. 1568
FAX: (208) 529-1159
Jack Clark
Ada County Assessor's Office
650 Main Street
Boise, ID 83702
(208) 345-2372

Byron Cochrane
Idaho Department of Lands
954 Jefferson
Boise, ID 83720
(208) 334-0205

Ronald N. Cole
Idaho Transportation Dept.
3311 W. State St.
P.O. Box 7129
Boise, ID 83707-1129
(208) 334-8222
FAX: (208) 334-4432
rcole@itd.state.id.us

John Courtright
IDHW-DEQ
1410 N. Hilton
Boise, ID 83706
(208) 373-0271

Rob Daley
Sawtooth National Forest
2647 Kimberly Road East
Twin Falls, ID 83301
(208) 737-3304
rdaley@micron.net

Linda Davis
ID Dept. of Water Resources
1301 N. Orchard Street
Boise, ID 83706-2237
(208) 327-7998
FAX: (208) 327-7866
ldavis@idwr.state.id.us

Tom Dechert
Idaho Department of Lands
Box 670
Coeur d'Alene, ID 83854
(208) 777-7854
FAX: (208) 769-1524
dlands@nidlink.com

Tom Dinardo
USGS/NMD/RMME
Box 24056, MS 507
Denver, CO 80127
(303) 202-4106
FAX: (303) 202-4137
tpdinardo@USGS.gov

Ross Dodge
Ada Planning Association
413 W. Idaho St.
Boise, ID 83702
(208) 345-5274
FAX: (208) 345-5279

Bruce Eggleston
Planner II
Boise City Planning and Development
150 North Capitol Boulevard
P.O. Box 500
Boise, ID 83701-0500
(208) 384-3830
beggleston@pobox.ci.boise.id.us

Roger Ellis
IDT - Pocatello District
1265 Monte Vista
Pocatello, ID 83201
(208) 234-1342

Gail Ewart
IDHW-DEQ
1410 N. Hilton
Boise, ID 83706
(208) 373-0226

Dick Foster
GIS Coordinator
Payette National Forest
Box 1026
McCall, ID 83638
(208) 634-0781
FAX: (208) 634-0744

Terra Frie
ID Dept. of Water Resources
1301 N. Orchard Street
Boise, ID 83706-2237
(208) 327-7883
FAX: (208) 327-7866

David Green
Rt. 2 Box 475
Grangeville, ID 83530
(208) 983-1950

Dave Gruenhagen
ID Department of Lands
954 West Jefferson St.
Boise, ID 83720-0050
(208) 334-0277
FAX: (208) 334-2339
e-mail: dgruenha@idl.state.id.us

Hall Guttormsen
ID State Tax Commission
Technical Support
800 W. Park, Plaza IV
P.O. Box 36
Boise, ID 83722
(208) 334-7750
FAX: (208) 334-7741

Amy Haak
Spatial Dynamics, Inc.
910 Main St, Ste 200
Boise, ID 83702-5732
(208) 345-6788
FAX: (208) 345-6766

Dick Halsey
USDA Forest Health Protection
1750 Front St., Room 202
Boise, ID 83702
(208) 364-4267
FAX: (208) 364-4111

Robert Harmon
Oregon Water Resources Dept.
158 12th Street N.E.
Salem, OR 97310

Lawrence Hartpence
ID Dept. of Fish and Game
600 S. Walnut
P.O. Box 83720
Boise, ID 83720
(208) 334-2772

Hal Hayball
Sho-Ban Tribes
P.O. Box 250
Fort Hall, ID 83203
(208) 238-3763
FAX: (208) 238-3742
salmon@nicoh.com

David Hoover
State GIS Coordinator
NRCS
3244 Elder St
Boise, ID 83706
(208) 378-5785
FAX: (208) 378-5735
dhoover@id.nrcs.usda.gov

Rob Howarth
DEQ - Boise Regional Office
1445 Orchard Street
Boise, ID 83706
(208) 373-0404
FAX: (208) 373-0287

Byron Keely
LHTAC
1436 W. Bannock
Boise, ID 83702
(208) 344-0565
FAX: (208) 344-0789
intac@micron.net

Jerry Korol
CFWR
University of Idaho
Moscow, ID 83844-1133
(208) 885-2595
FAX: (208) 885-6226
jkorol@uidaho.edu

Bill Kramber
ID Dept. of Water Resources
1301 N. Orchard
Boise, ID 83706-2237
(208) 327-7996
FAX: (208) 327-7866
bkrambe@idwr.state.id us

Bob Kukachka
USDA-NRCS
159 E Second S, No. 2
Soda Springs, ID 83276
(208) 547-4841
FAX: (208) 547-4801

Andy Little
Power Engineers
290 N. Maple Grove Rd.
Boise, ID 83704
(208) 378-6303
FAX: (208) 378-0025
alittle@ram.powereng.com
Pamela Lyon
Map Production Specialist
USDA-NRCS
3244 Elder, Rm 124
Boise, ID 83705-4711
(208) 378-5735
FAX: (208) 378-5724

Ted Martin
Canyon County Assessor's Office
1115 Albany St., Rm. 323
Caldwell, ID 83605
(208) 454-7279

Kim Mayeski
Caribou National Forest
Federal Building, Suite 172
2505 South 4th Avenue
Pocatello, ID 83201
(208) 236-7539

Diane McConnaughey
USFS - Boise National Forest
1750 Front St.
Boise, ID 83702
(208) 364-4247
FAX: (208) 364-4100

Jeff Mork
BLM-ISO
1387 S. Vinnell Way
Boise, ID 83709
(208) 373-3968

Tony Morse
ID Dept. of Water Resources
1301 N. Orchard Street
Boise, ID 83706-2237
(208) 327-7997
FAX: (208) 327-7866
tmorse@idwr.state.id.us

Dennis L. Murphy
GIS Applications Manager
Potlatch Corporation
805 Mill Road, Annex Bldg
P.O. Box 1016
Lewiston, ID 83501-1016
(208) 799-1156
FAX: (208) 799-1018
dlm@lewiston

Frank Mynar
Land Management Serv. Dept.
Idaho Power Company
P.O. Box 70
Boise, ID 83707
(208) 388-2977
FAX: (208) 388-6926

Doug Noltemeier
GIS Technical Analyst
Ada Planning Association
413 West Idaho, Ste 100
Boise, ID 83703
(208) 345-5274
FAX: (208) 345-5279

Roger North
ID Transportation Department
311 W. State
Boise, ID 83707
(208) 334-8223
FAX: (208) 334-4432

Rosa Nygaard
P.O. Box 7669
Missoula, MT 59807
(406) 329-3461

Carla Olson
4735 E. Castlewood Dr.
Meridian, ID 83642
(208) 378-4530

Jean Parcher
Coordination and Requirements
USGS - R M M C
Federal Ctr.
Box 25046, MS 507
Denver, CO 80225
(303) 202-4380
FAX: (303) 202-4137

Curt Penqelly
2608 McKinney
Boise, ID 83704
(208) 376-4963
FAX: (208) 376-4869
cpenqelly@simplot.com

Dennis Peters
U.S. Fish & Wildlife Service
911 NE 11th Ave.
Portland, OR 97232-4181
(503) 231-6154
FAX: (503) 231-2050

Mickey Pillers
Payette National Forest
P.O. Box 1026
McCall, ID 83638
(208) 634-0700
FAX: (208) 634-0744
mpil@cybeahighway.net

Edith Powaukee
Nez Perce Tribes
Box 365
Lapawi, ID 83540
(208) 843-7392
FAX: (208) 843-7391
klook.nezperce.org

Duane Priest
PLS
Latah County Surveyor
P.O. Box 8068
Moscow, ID 83843
(208) 882-8580
FAX: (208) 883-2293

Denny Rafferty
U.S. Forest Service
1750 Front Street
Boise, ID 83702
(208) 364-4138
FAX: (208) 364-4100

Scott M. Rasor
Meckel Engineering
402 Idaho Avenue
Coeur d'Alene, ID 83814
(208) 667-4368

Clarence Robison
Kimberly Research and
Extension Center
University of Idaho
3793 N 3600 E
Kimberly, ID 83341
(208) 423-6610
FAX: (208) 423-6559
robison@kimberly.uidaho.edu

Keven Roth
U.S. Geological Survey
511 National Center
Reston, VA 20192
(703) 648-5471
FAX: (703) 648-4722
kroth@USGS.gov

Randolph Rowell
Idaho Dept. of Transportation
1133 W. State Street
Boise, ID 83707
(208) 334-8206
rrowell@itd.state.id.us

Bill Rush
Boise National Forest
1750 Front Street
Boise, ID 83702
(208) 364-4163

Dave Short
ID Transportation Dept.
District 3 Office
8105 Chinden
Boise, ID 83714
(208) 334-8918
FAX: (208) 334-8917

Bob Smith
ID Department of Lands
1215 W. State St.
P.O. Box 83720
Boise, ID 83720-0050
(208) 334-0276
FAX: (208) 334-2339

Randall Sounhein
Water Quality Analyst
Panhandle Health District I
2195 Ironwood Ct.
Coeur d'Alene, ID 83835
(208) 667-9513
FAX: (208) 664-8736
rsoun@uidlink.com

Tom Spencer
BLM - ISO
1387 S. Vinnell Way
Boise, ID 83709
(208) 373-4000
FAX: (208) 373-3409
tspencer@id1546wp.idso.id.blm.gov

Linda Spillers
Forest & Health Protection
U.S. Forest Service
1750 Front Street
Boise, ID 83702
(208) 364-4267

Loudon Stanford
Idaho Geological Survey
Morrill Hall, Rm 332
University of Idaho
Moscow, ID 83844-3014
(208) 885-7979
FAX: (208) 885-5826
stanford@uidaho.edu

Heidi Veach
Payette National Forest
P.O. Box 205
New Meadows, ID 83654
(208) 347-2312

Luciel Vincent-Hixson
State Tax Commission
Technical Support
800 W. Park, Plaza IV
P.O. Box 36
Boise, ID 83722
(208) 334-7750
FAX: (208) 334-7741

Marsha Weil
Ada County Assessor's Office
650 Main St.
Boise, ID 83702-9921
(208) 364-2398

Dan White
U.S. Forest Service
324 25th Street
Odgen, UT 84401
(801) 625-5183

Luke White
P.O. Box 1625
Idaho Falls, ID 83415
(208) 526-1036
FAX: (208) 526-6902
wlj@inel.gov

Wayne Wold
Timberland Resources
Boise Cascade Corp.
P.O. Box 50
Boise, ID 83728
(208) 384-6368
FAX: (208) 384-7699
wlwold@aol.com

Bill Yeager
BLM - ISO
1387 S. Vinnell Way
Boise, ID 83709
(208) 373-3965
FAX: (208) 373-3949
byeager@id1546wp.idso.blm.gov

Sam Zahorka
Canyon County Assessor's Office
1115 Albany Street
Caldwell, ID 83605
(208) 454-6615

Tom Zarriello
USGS-BRD
970 Lusk Avenue
Boise, ID 83706
(208) 331-5204
FAX: (208) 331-5210
tzarriel@eagle.idbsn.edu

APPENDIX C: IDAHO GEOGRAPHIC INFORMATION ADVISORY COMMITTEE GLOBAL POSITION SYSTEM SUBCOMMITTEE GUIDELINES FOR RESOURCE GRADE GPS COORDINATE ACCURACY

Adopted October 12, 1994
Version 1.10

The following guidelines are considered to be the minimum requirements necessary to achieve the specified level of accuracy. Each resource/program specialist will have to determine his or her own Global Position System (GPS) accuracy requirements. In addition the manufacturer's instructions for the specific GPS unit in use should be followed.

I. Terminology

Base (reference, control) Station: A GPS receiver set up at a known location.

CEP (circular error probable): Statistical measure of accuracy; it implies the probability that 50 percent of the positions obtained will fall within a circle of the specified radius. Generally speaking, the accuracies mentioned below refer to CEP.

Note: Five meter CEP accuracy at the 50 percent confidence level converts approximately to a circle of nine meter radius at the 90 percent confidence level. This is nearly 30 feet and we are considering horizontal accuracy only. The vertical accuracy of resource grade GPS receivers is up to two times worse than the horizontal accuracy. National Map Accuracy standards require that 90 percent of the points tested on a 1:24,000-scale map should not be in error by more than 40 feet. So, 2-5 meter CEP does meet the National Map Accuracy standards for 1:24,000-scale mapping but not by nearly as much as it first sounds.

Datum, Geodetic: A set of constants specifying the coordinate system used for geodetic control, i.e., for calculating coordinates of points on the earth. At least eight constants are needed to form a complete datum: three to specify the location of the origin of the coordinate system, three to specify the orientation of the coordinate system, and two to specify the dimensions of the reference ellipsoid.

Dilution of Precision (DOP): A description of the uncertainty in a position fix can be described by several indicators. The more commonly used indicators are as follows:

GDOP Geometric (three position coordinates plus the clock offset in the solution)

PDOP Position (three coordinates)

HDOP Horizontal (two horizontal coordinates)

VDOP Vertical (height only)

TDOP Time (clock offset only)

RDOP Relative (normalized to 60 seconds)

Ellipsoid: In geodesy, unless otherwise specified, a mathematical figure formed by revolving an ellipse about its minor axis. It is often used interchangeably with spheroid.

Ellipsoidal Height (HAE): The measure of vertical distance above the ellipsoid. Not the same as elevation above sea level. GPS receivers output position-fix height in the WGS-84 datum.

Elevation Mask Angle: That angle below which it is recommended that satellites not be tracked. Normally set to a minimum of 10 degrees to avoid interference problems caused by buildings and trees and multipath errors.

Multipath: A term used to describe the effect caused by satellite signals reflecting off surfaces near the GPS receiver. This reflected signal is received along with the original signal and is a major contributor to error in GPS and cannot be corrected by differential correction.

PDOP (Position Dilution of Precision): PDOP is an indicator of the satellite's geometry in relation to the user's GPS receiver location. The smaller the number the better the geometry; therefore, the better the position.

Resource (navigation) grade receiver: A receiver that uses information in the satellites signal to calculate position. Examples of this type of receiver include the Trimble Pathfinder series, Magellan NAV PRO series and the Ashtech Ranger series.

Rover (remote) Station: A GPS receiver set up at an unknown location.

Selective Availability (SA): A Department of Defense program to control the accuracy of pseudo-range measurements, whereby the user receives a false pseudo-range which is in error by a controlled amount. Differential GPS techniques can reduce these effects for local applications.

SEP (spherical error probable): Statistical measure of accuracy; implies that at least 50 percent of the position fixes will fall within a sphere of the specified radius.

Survey (Geodetic) grade receiver: A receiver that uses the satellite's signal itself to calculate position. Examples of this type of receiver include the Trimble 4000 series, Ashtech M-XII series, Wild System 200 series and the Motorola Eagle.

Three-Dimensional GPS Data (3D Data): GPS data giving latitude, longitude and height of a point. (A minimum of four satellites must be tracked to obtain 3D Data.)

Two-Dimensional GPS Data (2D Data): GPS data giving only latitude and longitude position fixes using an estimated height. Since latitude and longitude are computed based upon the estimated height, the error of the horizontal position can be as much as twice the error in the height. This error is not removed by differential corrections to a base station, so 2D data is inherently more inaccurate than 3D data. (A minimum of three satellites must be tracked to obtain 2D data.)

User Range Accuracy (URA): 1) is an indicator that can be used to determine whether or not Selective Availability has been activated. A high URA (30 or above) is a good indicator of SA activation [Trimble], and 2) is a qualitative number showing the range accuracy of each satellite. The lower the number, the better the accuracy (0 indicates best accuracy: 8 or above means questionable accuracy - use at your own risk!) [Ashtech].

II. Definitions of collection methods:

A. **Static Absolute** - Uses only one receiver, accuracy can range from 25 to 100 meters spherical error probable (SEP) depending on the quality of the orbital data. Results are obtained in the field.

B. **Static Relative** - Uses two or more receivers, one of which must be on a position with known geodetic coordinates; accuracy can range from less than one centimeter (cm) to five meters depending upon the equipment used and the length of time on each station. All receivers track the same satellite signals. Resource Grade GPS receivers can obtain accuracies from two to five meters CEP. Requires post processing of data.

C. **Kinematic Absolute** - Uses only one receiver that keeps moving, records positions at a selected rate, accuracy can range from 25 to 100 meters SEP depending on the quality of the orbital data. Results are obtained in the field. This method

can be used to obtain a large amount of relatively low- accuracy coordinates by mounting the unit to any moving platform.

D. **Kinematic Relative** - Uses two or more receivers, one of which must be on a position with known geodetic coordinates, (i.e., base or reference) while the other(s) (i.e., rover or remote) move to or along unknown positions. All receivers track the same satellite signals. Accuracy can range from less than one cm to five meters depending on the grade of the receiver, and the procedure used. Resource Grade GPS receivers can obtain accuracies from two to five meters CEP.

1. **Real Time Kinematic.** This method requires the receivers to have a communication link between them. All receivers track the same satellite signals. The results are obtained in the field. A lock on the satellites as well as the communication link must be maintained by the receivers at all times or the data would not be reliable for the positions obtained during the loss of the signals. Accuracy can range from two to five meters CEP.

2. **Low Accuracy Kinematic.** This method is quite similar to the Real Time Kinematic method with the exception of the communication link and the fact that the data collected must be post- processed. This method seems to be the most viable for many LIS related applications; coordinates obtained on corners of the Public Land Survey using this method could be incorporated into the geographic-coordinates database (GCDB). Accuracy can range from 2 to 5 meters CEP.

3. **High Accuracy Kinematic.** This method makes use of survey grade receivers. The important differences between this method and other kinematic methods are, 1) the rover must become stationary at the unknown station for at least three minutes, 2) the rover must occupy every unknown station at least twice, 3) all receivers must maintain continuous lock on at least four satellites, all of which must be the same for each receiver, and 4) if the rover loses lock it must return to the last occupied station and resume data collection. The data collected must be post-processed. Accuracy can range from 1 to 5 cm.

III. Procedures

A. Accuracies of **less than two meters** may be obtained using survey grade GPS equipment. These guidelines are for resource grade GPS equipment and do not intend to cover the more accurate applications.

B. To achieve an accuracy of **one to five meters CEP** the following minimum requirements must be true.
1. Two or more resource grade receivers must be used with either static relative or kinematic relative methods. The receivers must be able to be differentially corrected. Multi-channel receivers with once per second update rate must be used in high dynamic situations, such as data collecting from aircraft or moving vehicle.
2. The roving receiver(s) must be differentially corrected against another receiver (i.e., base), which is on a station, the position of which is known to be accurate to one meter or better.
3. For point positioning, at least three minutes at a one second collection rate (i.e., 180 positions recorded) must be spent on each station, and the PDOP value must remain below six.
4. It is recommended that you re-occupy each unknown point for another three minute observation, or retraverse your route, at a different time period. Another option would be to move the rover to a position with known coordinates once every hour. This would show the level of repeatability in your coordinates relative to the previous observation and give you a better idea of the accuracy of the coordinates.

C. To achieve an accuracy of **less than 25 meters CEP** the following minimum requirements must be true.

1. Only one resource or survey grade receiver is necessary and any autonomous method can be used.
2. Selective Availability (SA), which is a term used by the Defense Department to refer to the period of time when the signals from the satellites will be intentionally degraded, must not be in effect. ****Note**** Check your GPS equipment manual for the specific method recommended by the vendor to determine if SA has been activated. Methods, values,

and terminology vary by vendor. The most common term to date is User Range Accuracy (URA). According to the Defense Department selective availability was reactivated in July of 1991 and will remain in effect until further notice. The level of its effect may change from time to time and anyone attempting to use GPS in autonomous mode should be aware that the accuracy may be different at different times and may change depending on what satellites are being observed. The only safe thing is to assume that when SA is activated you will not get an accuracy better than 100 meters in autonomous mode.

3. PDOP should remain below six.

D. If an accuracy of no better than **100 meters** is all that is desired, the following minimum requirements must be true.

Any resource or survey grade GPS unit used in any of the methods listed in section I. above.

The accuracies indicated above refer to a Circular Error Probable (CEP) which indicates that at least 50 percent of the coordinates obtained will fall within a circle of that radius 50 percent of the coordinates will fall outside that circle. For instance, if you set on a station for three minutes and your receiver gets a reading every second then at least 90 of the coordinates for that station will be within the circle. In addition, CEP refers to horizontal or two dimensional accuracy only. See discussion under CEP in definitions above.

IV. Final Product

In addition to the above requirements, the following information about the coordinate values must be recorded.

A. Which horizontal datum are the values recorded in:

1. NAD27 - North American Datum of 1927. Most information, including USGS topographic maps, are based on this datum.
2. NAD83 - North American Datum of 1983. GPS is actually using the World Geodetic System of 1984 (WGS84). There is very little difference between NAD83 and WGS84, and for the purpose of resource grade GPS and most survey grade GPS projects, the WGS84 values can be used directly as NAD83 values.

Software is available to convert (or transform) from one datum to another. The accuracy of these conversions varies with the amount of control available and the conversion program used. The difference between datums can be as high as 300 meters. Some GPS units come with conversion software, but be careful when using this software as it is usually based on a very large area and can degrade the accuracy of your coordinates. A transformation program put out by the National Geodetic Survey (NGS) called "NADCON" or one based on this program put out by the U.S. Army Corps of Engineers called "CORPSCON" is recommended and is available through NGS.

B. Which vertical datum, if any, are the elevations recorded in:

1. NGVD 29 - National Geodetic Vertical Datum of 1929.
2. NAVD 88 - North American Vertical Datum of 1988.

C. What Geoid Modeling Software was used if elevations are given:

1. Vendor supplied. (Which Vendor?)
2. Geoid 93 or Geoid 90, obtained from NGS.

D. What format are the coordinates in:

1. LATITUDE AND LONGITUDE - This can be either NAD27 or NAD83. Coordinates should be in degrees, minutes,

seconds, and decimal of seconds. If not, please specify.
2. UTM - Universal Transverse Mercator Coordinates should be in meters. If not, specify the units.
3. SPC - State Plane Coordinates. State Plane coordinates are reported on the NAD83 datum in meters. If not, specify the units.
4. IDTM - Idaho Transverse Mercator. Meters are to be used for both NAD27 and NAD83 datums.

APPENDIX D: GPS COORDINATE RECORDATION FORM

NAME OF OPERATOR: _____ DATE: _____ PROJECT: _____

COMPANY NAME: _____ COUNTY: _____ DESCRIPTION of PROJECT:_____

_____

HORIZONTAL COORDINATE OF POINT (Attach list if appropriate): _____VERTICAL COORDINATE OF POINT (Specify HAE or MSL): _____NAME AND MODEL OF RECEIVER: _____

___

POST PROCESSING SOFTWARE AND VERSION: _____ TRANSFORMATION SOFTWARE AND VERSION: _____

GEOID MODELING SOFTWARE AND VERSION: _____

NAME(s) OF CONTROL or BASE STATION(s) USED (Provide NAD 83 values):

#1_____ LAT: ___° ___' ___." LONG: ___° ___' ___." HAE:_____ MSL:_____

#2_____ LAT: ___° ___' ___." LONG: ___° ___' ___." HAE:_____ MSL:_____

#3_____ LAT: ___° ___' ___." LONG: ___° ___' ___." HAE:_____ MSL:_____

HORIZONTAL DATUM	VERTICAL DATUM	FORMAT	METHOD	PLATFORM	TIME	RELIABILITY
1. NAD27	1. NGVD 29	1. LAT & LONG	1. STATIC AUTONOMOUS	A. AIRBORNE VEHICLE	A. AUTONOMOUS	1. < 2 METERS
2. NAD83	2. NAVD 88	2. UTM	2. STATIC RELATIVE	L. LAND VEHICLE	B. POST PROCESSED	2. 2-5 METERS
	3. N/A (HAE)	3. SPC	3. KINEMATIC AUTONOMOUS	M. MARINE VEHICLE	C. REAL TIME COMM LINK	3. < 25 METERS
		4. IDTM	4. KINEMATIC RELATIVE	P. PORTABLE		4. ± 100 METERS
CODE: _	_	_	_	_	_	_

EXAMPLE CODE:

1	1	1	2	P	B	2
NAD27	NGVD 29	LAT & LONG	STATIC RELATIVE	PORTABLE	POST PROCESSED	2-5 METERS

APPENDIX E: USGS INTERNET ADDRESSES PRODUCT INFORMATION AND SOFTWARE TOOLS

Global Land Information System (GLIS) Search Database
http://edcwww.cr.usgs.gov/glis/glis.html

USGS Geospatial Data, Information, and Related Products
http://www-nmd.usgs.gov/www/products/1product.html

USGS Data available on-line in SDTS format
http://mcmcweb.er.usgs.gov/sdts/data.html

Data Standards:
DEM
ftp://mapping.usgs.gov/pub/ti/DEM/demstnds/

DLG
ftp://mapping.usgs.gov/pub/ti/DLG/dlgstnds/

DRG
ftp://mapping.usgs.gov/pub/ti/DRG/drgstnds/

DOQ
ftp://mapping-usgs-gov/pub/ti/DOQ/doqstnds/

USGS Data Summary and Background Information:
DLG
http://edcwww.cr.usgs.gov/glis/hyper/guide/usgs_dlg

DOQ
http://edcwww.cr.usgs.gov/glis/hyper/guide/usgs_doq

DEM
http://edcwww.cr.usgs-gov/glis/hyper/guide/usgs_dem

EROS Data Center Large Scale DLG Download Information
http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/ndcdb.html#LRG

DRG Product Information and Online Status Graphic
http://mcmcweb.er.usgs.gov/drg

DRG Map Collar Clipping Routines
ftp://ftpmcmc.cr.usgs.gov
cd/release/drg/clip

DRG-DEM-DOQ Merging Software
ftp://ftpmcmc.er.usgs.gov
cd /release/drg/merge/dgux

USGS tools for converting USGS data into Arc/Info readable format
http://rmmcweb.cr.usgs.gov/~dcatts/software

National Hydrography Data Set
http://nhd.fgdc.gov

APPENDIX F: IGIAC POLICY ON PLANE COORDINATE SYSTEM FOR STATEWIDE GEOGRAPHIC INFORMATION SYSTEMS

Adopted October 12, 1994

As digital data for Idaho becomes increasingly available, there are more frequent opportunity and need to use these data for GIS analysis and applications that cover the entire state. Digitized map data from the U.S. Geological Survey and other federal sources often are furnished in the Universal Transverse Mercator (UTM) coordinate system. This system splits Idaho into two zones, making it necessary to reproject data into a common system for statewide coverage. If one of the existing UTM zones is selected, excessive distortion and scale error can adversely affect results of GIS analysis. Other existing coordinate systems for the state also present this problem.

A coordinate systems tailored to Idaho is needed for applications that cover the entire state, to provide acceptable accuracies without excessive distortion, and to permit 0.1 meter resolution in single precision with no more than seven digits. The Idaho Transverse Mercator coordinate system (IDTM) is designed to meet these requirements (Gem State Surveyor, Winter 1993).

The IDTM is hereby adopted by IGIAC as acceptable and preferred for statewide GIS use.

Technical parameters of this system are:

1. Measurement unit: Meter
2. Central Meridian: 114 degrees West Longitude
3. Central Meridian scale factor: 0.9996
4. Horizontal Datum: NAD 1927 (until NAD '83 is adopted)
5. Latitude of Origin: 42 degrees North
6. False Northing at origin: 100,000 m
7. False Easting at origin: 500,000 m

APPENDIX G: STATE OF IDAHO POLICY STATEMENT FOR GEOGRAPHIC INFORMATION SYSTEMS

Background

In the past decade, governmental agencies and private industry have developed increasingly powerful computer systems designed to process and analyze map information. Collectively called geographic information systems (GIS), these systems have the potential to significantly increase efficiency and reduce costs to the state for conducting land, water, demographic, and other resource management activities.

GIS technology, much like the computer field in general, is in a period of dynamic evolution and growth. Moreover, GIS technology is but one of a number of related technologies (e.g., remote sensing and digital cartography) that could assist state agencies in carrying out their mandated responsibilities more efficiently. Indeed, these technologies are becoming ever more closely linked and are part of the information management activities of Idaho. Within this framework, it is imperative that emphasis be placed on coordination between the departmental organizations currently using or planning to use these technologies. This coordination will facilitate exchange of data between agencies.

Objectives

A. Encourage and assist in the development, implementation and use of geographic information systems to meet current and future statewide and departmental missions and objectives.

B. Establish an effective management and support framework for the orderly growth of geographic information system technology within the state.

C. Achieve and maintain levels of hardware, software and data compatibility in accordance with state standards and promote the sharing of technology, research, applications and data resources throughout the State of Idaho.

D. Encourage cooperative work among state agencies, universities, federal agencies and private associations to test, demonstrate and complete cooperative projects within their mandated responsibilities.

E. Coordinate development of statewide information predicated upon agencies implementing their own geographic information systems.

F. Develop a central catalog of geographic information for current and future agency and statewide applications.

Policies

It is the policy of the State of Idaho to encourage the utilization of geographic information systems when such use enhances the overall cost-effectiveness of administrative functions or improves productivity. It is also the state's policy to acquire and support geographic information systems through well-planned implementation strategies. These strategies include:

A. Develop and maintain data standards for base category data, statewide exchange data and, as needed, project data.

B. Develop and maintain contracts for state agency use covering the purchase of geographic information systems software and hardware.

Management and Organizational Responsibilities

A. The Idaho Geographic Information Advisory Committee (formerly the Idaho Mapping Advisory Committee) will be responsible for developing data standards for geographic information systems.

B. The IGIAC will be responsible for the development of specifications for the contract purchasing of geographic information systems hardware and software in conjunction with the state purchasing agent and the state data processing coordinator.

C. The acquisition and application of geographic information systems hardware and software will be accomplished in accordance with each agency's approved automated data processing plan.

D. The IGIAC will establish a standing GIS subcommittee to accomplish the following:

1. Hold quarterly meetings for information exchange and work status review. Identify opportunities for exchange of data, joint production of data or the contracting of work between state agencies.

2. Review needs for geographic information and determine data categories necessary for statewide applications. Establish and maintain an inventory of each category's collection status.

3. Provide GIS informational and educational opportunities as needed.

4. Work with agencies to implement the objectives of this policy.